REMARKS

In response to the Final Office Action mailed January 8, 2008, Applicants respectfully request entry of the amendments to the claims and favorable consideration of the following remarks. Claims 1-4, 6, 8-16, and 18-24 are pending in the present application. Claims 5, 7, and 25-29 have been canceled. Claims 1, 6, 13, 18, and 24 have been amended in the present reply. It is believed that no new matter has been added as further elaborated below through detailed citations to the specification pointing out the location in the specification, as filed, of support for language that has been added to the claims. Claim 1 has been amended to remove the words "at least one" and "randomly" in order to simplify argument and streamline prosecution. The amendment to claim 13 tracks the amendments supplied in the Applicants' Amendments and Remarks of October 16, 2007 in response to the Office Action of November 30, 2006, in that the amendment to claim 13 incorporates the same language as the amendments to claim 1 as previously presented. Applicants inadvertently failed to include the amendment to claim 13 in the previous reply. Applicants thank the Examiner for the withdrawal of the lack of enablement rejection under 35 U.S.C. §112, first paragraph, as to claims 1-4, 6, and 8-12 and the withdrawal of the indefiniteness rejection under 35 U.S.C. §112, second paragraph, as to claims 1-4 and 8-12. Since the amendments to claim 13 closely track the previously presented amendments that overcame the similar rejections as to claims 1-4, 6, and 8-12, it is believed that the present amendments will allow the withdrawal of the rejections as to claims 13-16 and 18-24. Thus, Applicants believe that the present amendments place the claims in a condition for allowance and respectfully request their entry.

Additionally, claims 6 and 18 have been amended to include the words "polymer subsample" and "a polymer comprising labeled and unlabled monomers" to incorporate language

from the claims from which they depend, and it is hoped that this amendment is viewed as minor. This amendment was not previously presented because it was believed that the amendments supplied in the October 16, 2007 amendment would overcome the indefiniteness rejection under 35 U.S.C. §112, second paragraph. It is hoped that this amendment also places these claims in a condition for allowance and may be entered.

Claims 1-4, 6, and 8-12 stand rejected under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. The office action notes that the applicant failed to point out any written support in the originally filed disclosure for the phrases in claim 1: "wherein there is at least one polymer subsample created for each type of monomer present in the polymer sample" and "wherein both labeled and unlabeled instances of the one monomer type are randomly incorporated in the polymer subsample." To comply with the written description requirement each claim limitation should be supported by the originally filed disclosure either expressly, implicitly, or inherently. However, the subject matter of the claim does not need to "be described literally (i.e., using the same terms or *in haec verba*) in order for the disclosure to satisfy the description requirement." M.P.E.P. §2163 and §2163.02 (Rev. 6, Sept. 2007) 2100-186. Applicants herein supply citations to the disclosure as filed where the present claims are supported and where the specification conveys with reasonable clarity to those skilled in the art the invention claimed.

The phrase present in claim 1, "wherein there is at least one polymer subsample created for each type of monomer present in the polymer sample," has been amended to read "wherein there is a polymer subsample created for each type of monomer present in the polymer sample," in order to facilitate prosecution and argument. Written description for the phrase "wherein there is a polymer subsample created for each type of monomer present in the polymer sample" can be

found in the claims the specification as originally filed. Originally filed claim 1 stated that a polymer sample is divided "into a number of polymer subsamples equal to a number of different monomer types comprising the polymer sample" and amended claim 1 reads that the polymer sample is divided "into a number of polymer subsamples, wherein there is a polymer subsample created for each type of monomer present in the polymer sample." In both instances (as originally filed and as amended) the claim calls out that there is a subsample created for each monomer type comprising the polymer sample. The newer claim no longer contains the word "equal," in reference to the number of polymer subsamples, however the omission of a limitation does not necessarily render a claim invalid for lack of written description under 35 U.S.C. §112, unless the limitation has been described as an essential or critical feature of the invention. For example, in *In re Peters*, a claim limitation as to a "specific tapered shape of the tips" associated with a display device, was removed, broadening the claims, and the removal did not violate the written description requirement, since the specification as filed did not describe the tapered shape as essential or critical to the operation or patentability of the claim. M.P.E.P §2163.05 (Rev. 6, Sept 2007) (citing *In re Peters*, 723 F.2d 891, 221 USPQ 952 (Fed. Cir. 1983)) 2100-189. In the present application, the specification does not describe the limitation as to an "equal number of polymer subsamples" as critical or essential to the invention. Further the limitation "wherein there is a polymer subsample created for each type of monomer present in the polymer sample" is additionally supported at least by the following parts of the specification and drawings as filed: in Figure 2, depicting a partial labeling of adenosine nucleotides (monomers) in a DNA subsample, in the specification pages 6-7, lines 13-14, describing an embodiment in which subsamples are created, in the specification page 25-26, lines 30-5, describing sequencing embodiments in which three and two subsamples are labeled and detected for sequencing a polymer having four types of

monomers, and in the Examples: DNA Sequencing section, Specification page 28, lines 5-17 in which an embodiment is described in which an "isolated [DNA] fragment is divided into 4 sub-samples" which are then "partially labeled."

Turning now to the phrase found in claim 1, "wherein both labeled and unlabeled instances of the one monomer type are incorporated in the polymer subsample," the following provides a listing of disclosure as originally filed that provides written description for the amendment. Written description can be found, for example, in Figure 2, in which a subsample of DNA is depicted in which both labeled and unlabeled instances of one monomer type (in the example, the monomer that is labeled is "a" (adenosine), and the "*"s indicate places in the complementary strands **230**, **240**, and **250** in which a labeled adenosine has been incorporated. By comparing the complementary strand **210** in Figure 2 showing a sequence for the polymer, it can be seen that both labeled and unlabeled adenosines have been incorporated into the complementary strands **230**, **240**, and **250** that have been synthesized. See also, for example, pages 3-4, lines 25-4, briefly describing Figure 2, pages 6-7, lines 13-14, describing an embodiment in which subsamples are created, pages 7-14, in the section labeled "Partial labeling of polymers," in which the partial labeling of DNA polymers is described, and more specifically on page 11, lines 20-26, that describes a non-limiting example, in which "the percentage of labeled nucleotide precursors added to a particular reaction is 10%," and states that "it is contemplated that the percentage of labeled nucleotide precursors in a reaction range from about 0.5 to about 85% of the total amount of the same type of nucleotide in that reaction." By synthesizing a complementary DNA strand using reagents containing both labeled and unlabeled nucleic acids precursors (monomers) of the same type, both labeled and unlabeled instances of the nucleic acid precursor (monomer) will be incorporated into the nucleic acid strand.

Additionally see, the Examples: DNA Sequencing section, page 28, lines 5-17 in which an embodiment is described in which an "isolated [DNA] fragment is divided into 4 sub-samples" which are then "partially labeled." Thus, one of skill in the art would find ample support for the amendments in the disclosure as filed.

Claims 13-16 and 18-24 stand rejected under 35 USC §112, second paragraph, as failing to comply with the enablement requirement. Claim 13 has been amended to reflect amendments that overcame a similar rejection as to claims 1-12. The supporting arguments are repeated here. However, Applicants believe that one skilled in the art, with reference to the specification, would be able to understand the claims as written. The claims may be understood with reference to Figure 2 and Example 1, for example. Figure 2 depicts a DNA sequence **210**, in which the monomer "a" has been partially labeled in three different examples, indicated as **230**, **240**, and **250**, so that the monomer "a", as it appears in the polymer sequence is sometimes labeled and sometimes not labeled. In Figure 2, polymers **230**, **240**, and **250** represent different instances in which the labeled monomer "a" has been randomly incorporated. Partial incorporation of labeled monomers can be achieved by providing a solution during polymer synthesis that contains both labeled and unlabeled monomers of the same type. Examples: DNA Sequencing (Specification, page 28) describes an example in which a polymer having four different monomers is sequenced. In the DNA Sequencing Example, four different sub-samples are created. In a first sub-sample, one of the monomers is labeled part of the time, so that the polymer in the subsample contains both labeled and unlabeled monomers of a particular type. In the second polymer subsample, a second different monomer is labeled part of the time, and so on. Specification page 8, lines 18-34, describes how a polymer, such as DNA, may be synthesized having both labeled and unlabeled monomers. The partially labeled polymer subsample is then digested (one monomer at

a time is cleaved sequentially from the polymer chain) and the cleaved monomers are detected as a function of time. However, in order to expedite prosecution, Applicants have amended claim 13, the independent claim, to remove the rejected language. It is hoped that these amendments place the claims in a condition for allowance.

Claims 6, 13-16, and 18-24 stand rejected under 35 USC §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. As discussed in the preceding paragraph, Claims 6, 13, 18, and 24 have been edited to expedite prosecution. Claim 13 has been amended to reflect amendments that overcame a similar rejection as to claims 1-12. Claims 6 and 18 have been amended to incorporate language found in the claims from which they depend. In claim 6, "labeled nucleic acid" has been deleted and replaced with "polymer subsample." In claim 18, "labeled nucleic acid" has been deleted and replaced with "a polymer comprising labeled and unlabeled monomers." Support for the amendment can be found in the claims and the specification as filed, for example, the specification page 15, lines 7-17, discusses "techniques to immobilize the partially labeled nucleic acid molecule **102** on surfaces **109**..." and the specification page 28, lines 5-17 in the Examples: DNA Sequencing section, describes an embodiment in which subsamples of "partially labeled DNA **230** [are] immobilized on [a] surface..." Additionally, claim 24 has been amended to remove the word "strand." It is hoped that these amendments place the claims in a condition for allowance.

In the event that the Office declines to enter the present amendment, if any proposed amendment to any claim would render that claim allowable, Applicants respectfully request that the Office inform Applicants of the same pursuant to M.P.E.P. §714.13 (Rev. 6, Sept. 2007) 700-262. Additionally, Applicants' attorney would like to request an interview with the Examiner

Examiner pursuant to M.P.E.P. §714.12 (Rev. 6, Sept. 2007) 700-260 to discuss remaining issues in order to facilitate prosecution.

In conclusion, Applicants believe that the present amendments and arguments provide claims that are allowable and respectfully request the entry of the amendments. In the alternative, Applicants request information as to any amendments that might be allowable and for an interview with the Examiner.

Respectfully submitted,

INTEL CORPORATION

Dated: May 15, 2008,

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I hereby certify that this correspondence is being electronically filed with the US Patent and Trademark office via the PTO EFS-Web on May 15, 2008.

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Julia Hodge *May 15, 2008*